

CLAIMS

What is claimed is:

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1. An object having an associated authentication marker comprising:
 - 2 an object having a first surface;
 - 3 an authentication marker disposed on said first surface of said object;
 - 4 said authentication marker comprising:
 - 5 an electrophoretic display medium having a display state, a first surface,
 - 6 and a second surface; and
 - 7 a first electrode disposed adjacent said first surface of said electrophoretic
 - 8 display;
 - 9 wherein said display state changes in response to an electrical signal communicated to
 - 10 said first electrode.
 - 1 2. The object of claim 1 further comprising a second electrode disposed adjacent to
2 said second surface of said electrophoretic display medium
 - 1 3. The object of claim 2 wherein at least one of said first electrode and said second
2 electrode is disposed in a pattern forming text.
 - 1 4. The object of claim 2 wherein at least one of said first electrode and said second
2 electrode is disposed in a pattern forming an image.
 - 1 5. The object of claim 2 wherein at least one of said first electrode and said second
2 electrode is substantially clear.
 - 1 6. The object of claim 2 wherein said electrical signal comprises an electrical field
2 applied between said first electrode and said second electrode.

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- 1 7. The object of claim 1 wherein said electrophoretic display medium is disposed in
2 a pattern forming text.
- 1 8. The object of claim 1 wherein said electrophoretic display medium is disposed in
2 a pattern forming an image.
- 1 9. The object of claim 1 wherein said electrophoretic display medium comprises at
2 least one microencapsulated electrophoretic particle.
- 1 10. The object of claim 1 wherein said display state is an optical property.
- 1 11. The object of claim 10 wherein said change in said display state comprises a
2 change to a substantially transparent optical property.
- 1 12. The object of claim 10 wherein said change in said display state comprises a
2 change to a substantially opaque optical property.
- 1 13. The object of claim 1 wherein said display state is an impedance.
- 1 14. The object of claim 1 wherein said change in said display state comprises a
2 change to reveal text obscured by said electrophoretic display medium.
- 1 15. The object of claim 1 wherein said change in said display state comprises a
2 change to reveal an image obscured by said electrophoretic display medium.
- 1 16. The object of claim 1 wherein said electrophoretic display medium is disposed on
2 said first electrode.
- 1 17. The object of claim 16 wherein said first electrode is a conductive substrate.
- 1 18. The object of claim 1 wherein said object is selected from the group consisting of
2 currency, stock certificates, bond certificates, negotiable instruments, debit cards,
3 credit cards, and smart cards.

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1 19. The object of claim 1 wherein said authentication marker is affixed to said first
2 surface of said object.

1 20. The object of claim 1 further comprising a second electrode adapted to interact
2 with said authentication marker wherein said display state changes in response to
3 an electrical signal communicated between said first electrode and said second
4 electrode.

1 21. The object of claim 20 wherein said second electrode is an electrostatic head.

1 22. The object of claim 20 wherein said second electrode is a charged stylus.

1 23. The object of claim 20 wherein said second electrode is in communication with a
2 validation machine.

1 24. The object of claim 1 further comprising a timer in communication with said
2 authentication marker.

25. An authentication marker for association with an object, said authentication
2 marker comprising:
3 an electrophoretic display medium having a display state, a first surface, and a
4 second surface; and
5 a first electrode disposed adjacent said second surface;
6 wherein said display state changes in response to an electrical signal communicated to
7 said first electrode.

1 26. A secure document comprising:
2 a conductive substrate having a surface and having a message disposed on said
3 surface; and
4 an electrophoretic display medium having a first display state and a second
5 display state and disposed adjacent said conductive substrate;
6 wherein said first display state changes in response to a first electrical signal

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7 communicated to said conductive substrate to reveal said message and said second
8 display state changes in response to a second electrical signal communicated to said
9 conductive substrate to obscure said message.

1 27. The secure document of claim 26 wherein said message comprises text.

1 28. The secure document of claim 26 wherein said message comprises an image.

1 29. The secure document of claim 26 wherein said electrophoretic display medium
2 comprises at least one microencapsulated electrophoretic particle.

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1 30. A secure document comprising:
2 a substrate having a surface and having a message disposed on said surface;
3 an electrophoretic display medium having a first display state and a second
4 display state and disposed adjacent said substrate; and
5 a first electrode disposed adjacent said electrophoretic display medium;
6 wherein said first display state changes in response to a first electrical signal
7 communicated to said first electrode to reveal said message and said second display state
8 changes in response to a second electrical signal communicated to said first electrode to
9 obscure said message.

1 31. The secure document of claim 30 wherein said message comprises text.

1 32. The secure document of claim 30 wherein said message comprises an image.

1 33. The secure document of claim 30 wherein said message is comprised of
2 conductive ink.

1 34. The secure document of claim 33 wherein at least one of said first electrical signal
2 and said second electrical signal comprises an electrical field applied between said
3 first electrode and said conductive ink.

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1 35. The secure document of claim 30 further comprising a second electrode disposed
2 adjacent said substrate and adjacent said electrophoretic display medium.

1 36. The secure document of claim 35 wherein at least one of said first electrical signal
2 and said second electrical signal comprises an electrical field applied between said
3 first electrode and said second electrode.

1 37. The secure document of claim 30 further comprising a second electrode adapted
2 to interact with said electrophoretic display medium.

1 38. The secure document of claim 37 wherein said second electrode is an electrostatic
2 head.

1 39. The secure document of claim 37 wherein said second electrode is a charged
2 stylus.

1 40. The secure document of claim 37 wherein said second electrode is in
2 communication with a validation machine.

1 41. The secure document of claim 30 further comprising a timer in communication
2 with said electrophoretic display medium.

1 42. The secure document of claim 30 wherein said electrophoretic display medium
2 comprises at least one microencapsulated electrophoretic particle.

Sub 25 43. A method for authenticating an object comprising the steps of:
2 providing an object having a surface and having an authenticating marker
3 disposed adjacent said surface, said authenticating marker comprising at least one
4 electrode and an electrophoretic display media having a display state;
5 applying at least one electrical signal to said authenticating marker to change said
6 display state; and
7 authenticating said object by said change of at least one of said display state.

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1 44. A method for securing a document comprising the steps of:
2 providing a substrate;
3 providing an electrophoretic display media having a state and disposed adjacent
4 said surface; said substrate and the display media forming a message;
5 providing at least one electrode disposed adjacent said electrophoretic display
6 media;
7 applying a first electrical signal to said at least one electrode to change said at
8 least one display state to obscure said message; and
9 applying a second electrical signal to said at least one electrode to change said at
10 least one display state to reveal said message.

1 45. A method for securing a document comprising the steps of:
2 providing a secure document comprising a substrate having a surface;
3 disposing a message on said surface, said message comprising a conductive ink;
4 disposing an electrophoretic display media having a display state adjacent said
5 surface;
6 providing a first electrode adapted to interact with said secure document; and
7 communicating a first electrical signal between said conductive ink and said first
8 electrode to change said display state to shield said message.

1 46. A method for securing a document comprising the steps of:
2 providing a substrate having a surface and a message disposed on said surface;
3 disposing a shield on said surface, said shield comprising a first clear electrode, an
4 electrophoretic display media having a display state and disposed on the first electrode,
5 and a second electrode disposed adjacent the display media; and
6 communicating a first electrical signal between said first clear electrode and said
7 second electrode to shield said message.

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